Patent claims

1. Process for producing in particular dimensionally stable packs (10) made of (thin) cardboard, in particular hinge-lid boxes for cigarettes, with an outer wrapper (13) made of sealable and shrink-wrap film, with folding tabs (20, 21; 23, 24, 25, 26) of the outer wrapper (13) enclosing the pack (10) being connected to one another in the region of overlaps by thermal sealing, **characterized in that** the folding tabs (20, 21; 23, 24, 25, 26) are fixed in the folding position by tacking or by tack connection, in particular by small surface-area, spot or linear sealing and that subsequently the folding tabs (20, 21; 23, 24, 25, 26) are connected to one another in the region of overlapping by (full-surface) sealing.

2. Process according to Claim 1, **characterized in that** the outer wrapper (13) is a shrink-wrap film, that is, a film which shrinks when subjected to heat treatment, and that following the (full-surface) sealing of the folding tabs (20, 21; 23, 24, 25, 26) the pack (10), being provided with the outer wrapper

(13), is subjected to a (further) heat treatment to generate shrinkage of the outer wrapper (13).

3. Process according to Claim 1 or 3, **characterized by** the following features:

a) a blank for forming the outer wrapper (13) is first folded around the pack (10) in a tubular shape in such a way that side tabs (20, 21) of the outer wrapper (13) (partially) overlap one another,

b) then the side tabs (20, 21) are connected to one another in the region of the overlap by tacking, in particular by spot seals (27) and/or by a narrow continuous or interrupted sealing strip (28),

c) thereafter the folding tabs assigned to an end wall (18) and/or a base wall (19), namely transverse tabs (23, 24) and longitudinal tabs (25, 26), are folded,

d) finally, the tabs assigned to the end wall (18) and/or to the base wall (19) are connected to one another in the region of an overlap by tacking, preferably by short, narrow tacking strips (29, 30).

4. Process according to Claim 1 or 2, **characterized by** the following features::

a) the outer wrapper (13), preferably a shrink-wrap film, is folded around the pack (10) in a tubular shape in the region of a folding turret (35) in such a way that partially overlapping side tabs (20, 21) are formed,

b) the side tabs (20, 21) of the outer wrapper (13) are connected to each other by a tacking seal in the region of the folding turret (35),

c) the outer wrapper (13) is then folded to completion, in particular while being pushed out of the folding turret (35) into a horizontal folding path (45) adjoining the folding turret (35),

d) tacking connections for folding tabs formed in the region of end wall (18) and/or base wall (19), namely transverse tabs (23, 24) and longitudinal tabs (25, 26), are then provided in the region of an (upright) pack tower (49) by means of tacking elements (51),

e) afterwards, as the packs (10) are moved upwards and subsequently in a transverse, horizontal direction, preferably full-surface seals are provided to connect the folding tabs (20, 21; 23, 24, 25, 26) by means of sealing tools (54) in the region of the pack tower (49) and sealing jaws (55) in the region of a sealing path (50).

5. Process according to Claim 3, **characterized in that,** in the region of end wall (18) and base wall (19), the folding tabs are sealed by two spaced-apart, transverse tacking strips (29, 30) which are provided in the region of an overlap of the respective transverse tabs (23, 24) and longitudinal tabs (25, 26).

6. Apparatus for providing an outer wrapper (13) made of thin film, preferably shrink-wrap film, on (dimensionally stable) packs (10) made of (thin) cardboard or the like, in particular on hinge-lid boxes for cigarettes, **characterized by** the following features:

a) a folding assembly, in particular folding turret (35), for providing the outer wrapper (13) in tubular form on the pack (10),

b) by at least one tacking station (38, 39) for providing a tacking seal in the region of an overlap (22) of side tabs (20, 21) of the outer wrapper (13),

c) a further tacking station, following folding elements for folding tabs (23..26) in the region of end wall (18) and base wall (19) for the tack sealing of the folded folding tabs, namely transverse tabs (23, 24) and longitudinal tabs (25, 26),

d) at least one sealing station or sealing path (50) for the preferably full-surface sealing of the folding tabs (20, 21; 23, 24, 25, 26) in the region of the overlaps.

7. Apparatus according to Claim 6, **characterized in that** tacking stations (38, 39) for tacking the side tabs (20, 21) are assigned to the folding turret (35), with stationary tacking elements (40, 43) outside the movement path of the folding turret (35), it being possible for the tacking elements (40, 43), for carrying out the tacking operation, to be moved against the radially outwardly directed, folded side tabs (20, 21).

8. Apparatus according to Claim 6 or 7, **characterized in that** folding of folding tabs of the end wall (18) and base wall (19) can be completed in a horizontal folding path (45) adjoining the folding turret (35), and in that further tacking elements (51, 52) are arranged at the end of the folding path (45) in order to provide the tacking strips (29, 30) in the region of the folded transverse tabs (23, 24) and longitudinal tabs (25, 26).

9. Apparatus according to Claim 6, **characterized in that**, following the tacking operation, the outer wrapper (13) first of all can be sealed over the full surface area in the region of the side tabs (20, 21) by a sealing tool (54) and then, in the region of a sealing path (50), can be sealed over the full surface area on the end wall (18) and base wall (19) by sealing jaws (55), and in that the packs (10) can then be conveyed through a shrink-wrap station (56).

ADD A1

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List of designations

10 Pack
11 Box part
12 Lid
13 Outer wrapper
14 Front wall
15 Rear wall
16 Side wall
17 Side wall
18 End wall
19 Base wall
20 Side tab
21 Side tab
22 Overlap
23 Transverse tab
24 Transverse tab
25 Longitudinal tab
26 Longitudinal tab
27 Spot seal
28 Sealing strip
29 Tacking strip
30 Tacking strip
31 Pack path
32 Blank unit
33 Material web
34 Blank conveyor
35 Folding turret
36 Pocket
37 Folding finger
38 Tacking station
39 Tacking station
40 Tacking element
41 Sealing tool
42 Carrying arm
43 Tacking element
44 Push-out station
45 Folding path
46 Folding finger
47 Folding element
48 Platform
49 Pack tower
50 Sealing path
51 Tacking element
52 Tacking element
53 Tacking jaw
54 Sealing tool
55 Sealing jaw
56 Shrink-wrapping station
57 Heating plate
58 Heating plate
59 Heating plate